REMARKS

Reconsideration of this application is respectfully requested.

In response to the Examiner's rejection of claims 19-28 and 35-48 under 35 U.S.C. §112, second paragraph, claim 48 has been amended above so as to more explicitly and positively recite "method" steps.

However, the Examiner's objection to claims 35 and 44 are not understood. For example, claim 35 already does positively recite method steps (i.e., "detecting...", "controlling...", and "detecting..."). Furthermore, the preamble of claim 44 which is directed to a method should not literally and exactly "match that of claim 19" because claim 19 is an apparatus claim. In substance, the preambles do match because claim 19 is directed to a "fluid flow amount and direction measuring" apparatus while the preamble of claim 44 is directed to a "fluid flow amount and direction measuring" method. Accordingly, insofar as is conceivably possible, the preambles of these respective apparatus and method claims do "match".

It is believed that the Examiner possibly intended to refer to claim 42 with respect to an inappropriate preamble because it has been noted in preparing this response that claim 42 should have been dependent from claim 35 instead of claim 19. That error has been corrected by the above amendment.

Accordingly, all outstanding formal issues are now believed to have been resolved in the applicant's favor.

The rejection of claims 1-28 and 35-43 under 35 U.S.C. §102 as allegedly anticipated by Konzelmann is respectfully traversed.

As previously pointed out, Konzelmann does not teach disposition of a flow amount detector R_S disposed either upstream or downstream of the heater resistance R_H. Instead, as depicted in the front view of Figure 2 and the rear view of Figure 3 (and corresponding text), these two elements are located exactly at the same fluid flow location -- and are expressly placed in intimate good thermal contact with one another so that they are always essentially at the same temperature (e.g., see column 3, lines 12-14 and column 6, lines 10-21).

The Examiner does not find this argument to be "persuasive" for the following reason(s):

> "...The Examiner does not agree with this argument. Fig. 1 clearly illustrates flow amount detector is disposed downstream of the heater resistance. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., accurately measure the true net flow amount) are not recited in the rejected claim(s). ..." [taken from the paragraph bridging pages 3 and 4 of the outstanding Office Action]

However, it is respectfully noted that Figure 1 is merely a schematic circuit diagram which has been drawn so as to properly include the resistor R_S within the bridge

circuit enclosed by dotted lines 3 and to avoid unnecessary crossing of connecting lines from resistor R_H to the operational amplifier 7 and the like. The accompanying front and rear views (Figs. 2 and 3) of the same single "present invention" embodiment described by Konzelmann clearly and unequivocally show that in actuality resistors R_S and R_H are mounted back-to-back in positions that are exactly coextensive within the fluid flow 2 being measured. As previously pointed out, there is also explicit teaching in Konzelmann that there is good thermal contact between R_S and R_H so as to preclude having any effective upstream or downstream position of the kind being claimed by the applicant.

Accordingly, the only teaching of the Konzelmann reference to those having ordinary skill in the art at the time of applicant's invention (and without any hindsight in view of the applicant's invention) would clearly not include the schematic circuit diagram of Figure 1 as placing the resistors R_S and R_H in differing upstream/downstream positions. To the contrary, the only possible teaching of the Konzelmann reference is to the exact contrary. Namely, the explicit teaching of Konzelmann is to place these two resistors in intimate thermal contact at exactly the same relative disposition with respect to the moving fluid.

Although Konzelmann does recognize a possible problem with fluctuating flows and/or even backflows, the Konzelmann approach is to improve measuring accuracy by using a relatively narrow slit 50 between a temperature-dependent compensating resistor R_K and the downstream heater and measurement resistors R_H and R_S -- which are both

maintained at the same temperature and located at equal distances downstream from the compensating resistor R_K.

While this proposal by Konzelmann may indeed reduce the boundary layer that allegedly forms along the measuring resistor, and thus at least decrease erroneous mass flow indications due to backflow (e.g., see column 5, lines 47-50), this structure and methodology is entirely separate and distinct from any possible suggestion of applicant's claimed invention which requires, inter alia, the flow amount detector and heater to be disposed at different upstream/downstream positions. For example, applicant's claimed structure specifically does not provide intimate thermal contact between the flow detector and heater such that they are always at substantially the same temperature. To the contrary, applicant requires these two elements to be disposed at different upstream/downstream positions within the fluid flow so that they take on different temperatures and the fluid flow amount being detected can be associated with fluid flow direction. There is simply no such teaching (or suggestion) anywhere in Konzelmann '466.

The Examiner alleges that such arguments may not yet be supported by the literal claim recitations at issue. The applicant respectfully disagrees. The applicant's novel claimed structure/method permits accurate measurement of the true net fluid flow amounts -- whether or not these exact words of result are explicitly employed.

For example, claim 1 specifically requires a flow amount detector to be disposed either upstream or downstream of a controllable referenced temperature heater. Claim 1 also requires a detecting means for detecting the fluid flow amount variable with the fluid flow direction from the temperature detected by the fluid amount detector. Konzelmann has no such structure.

Dependent claims 2-10 and 17 add yet further patentable distinction to the applicant's claimed structure.

Independent claim 11 requires a first temperature detector to be disposed upstream of the heater and a second temperature detector to be formed either upstream or downstream of the heater. Claim 11 also recites a control circuit for, inter alia, producing an output that varies as a function of (a) relative temperatures and (b) with the direction of fluid flow passing along the substrate. There is no such teaching or suggestion anywhere in Konzelmann. Dependent claims 12-16 and 18 add yet further patentable distinction to the claimed combination of features.

Claim 19 is specifically directed to a fluid flow amount and direction measuring apparatus which includes a fluid flow detector disposed upstream or downstream of a controllable heater and providing a temperature dependent resistance that is a predetermined function of both the fluid flow amount and fluid flow direction. For reasons already noted above, Konzelmann cannot possibly anticipate (or make obvious) such a claimed arrangement because that would be inconsistent and contrary to the

explicit Konzelmann teaching (especially when taken as a whole and interpreted through the eyes of one having only ordinary skill in the art at the time the applicant's invention was made without the use of hindsight).

Dependent claims 20-28 add yet further patentable distinction to the claimed apparatus.

Claim 29 requires a first temperature detector located upstream of the heater and a second temperature detector located at a position closer to the heater than the first temperature detector and also either upstream or downstream of the heater. Claim 29 also requires a control circuit to control the other claimed elements of the apparatus to produce an output signal varying as a function of both the difference between a detected temperature and a reference temperature and the flow direction of fluid passing along the substrate. As previously noted, Konzelmann actually teaches intimate thermal contact between the heater resistance and the sensing resistance R_S such that even if one considers only the first of the claimed output signal characteristics, that would be inconsistent with the Konzelmann teaching.

Dependent claims 30-34 add yet further patentable distinction to the claimed apparatus.

Method claim 35 is directed to fluid flow amount and direction measuring including recitations requiring, inter alia detection of fluid flow at a location upstream or

downstream of a controllable heater so as to provide a temperature dependent resistance that is a predetermined function of both fluid flow and direction. Such claimed methodology is completely contrary to any possible teaching or suggestion of Konzelmann for reasons already noted.

Dependent claims 36-43 add yet further patentable distinction to the claimed methodology.

Independent method claim 44 requires, inter alia, producing an output signal which varies as a function of both the difference between a temperature detector and a reference temperature and the flow direction of fluid passing along the substrate. There is simply no such teaching (or suggestion) anywhere in Konzelmann for reasons already noted. Dependent claims 45-48 add yet further patentable distinction to the claimed methodology.

As will be noted, all of applicant's claims recite apparatus and/or method which provide outputs indicative of fluid flow amount and direction. Such claimed structure/method permits accurate measurement of true net fluid flow amount. It is not believed necessary for applicant to explicitly recite that possible advantageous usage of such novel apparatus/method for patentable weight to be given to arguments reflecting the fact that applicant's invention is distinguished from the prior art which is incapable of providing such outputs (i.e., the prior art is incapable of providing outputs permitting accurate measurement of true net fluid flow amounts).

The rejection of claims 11-16, 29-34 and 44-48 under 35 U.S.C. §103 as allegedly being made "obvious" based on Konzelmann in view of Hiromasa et al '698 is also respectfully traversed.

Here, the Examiner recognizes that these claims require a second temperature detector -- and that such is not in any way taught or suggested by Konzelmann. To supply this admitted deficiency, the Examiner relies upon Hiromasa '698 simply because it teaches the use of a "second" temperature detector. However, the Examiner neglects to offer even any argument that the second detector in Hiromasas '698 is taught in a context that even approaches the context of applicant's claimed second temperature detector in the claims of the present application -- or how a further temperature detector could possibly be usefully connected into the Konzelmann circuitry.

In a nutshell, Hiromasas '698 does not supply basic fundamental deficiencies of the primary Konzelmann reference. Nor are the teachings of Hiromasa et al '698 with respect to a "second" temperature detector particularly relevant to the presently claimed structure/method -- or any rational modification of the Konzelmann circuit.

Accordingly, this entire application is now believed to be in allowable condition and a formal Notice to that effect is respectfully solicited.

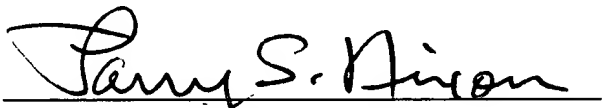
The undersigned has recently attempted to arrange an interview with the Examiner to discuss all these points and insure that there is at least no misunderstanding between

our respective positions in the hope of avoiding a possibly unnecessary appeal. It is hoped that such an interview can be held in the next few days in conjunction with the Examiner's consideration of this response. If not already accomplished by the time this reaches the Examiner, a telephone call to the undersigned is requested.

Attached hereto is a marked-up version of the changes made to the claim(s) by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please substitute the following amended claim(s) for corresponding claim(s) previously presented. A copy of the amended claim(s) showing current revisions is attached.

To obviate an outstanding formality-based rejection under 35 U.S.C. §112(2), please amend claims 42 and 48:

42. (Amended) A fluid flow amount and direction measuring method as in claim [19] 35 further comprising:

using a fluid temperature detector, fluid flow detector and heater formed on a substrate having a cavity underneath the fluid temperature detector.

48. (Amended) A fluid flow amount and direction measuring method as in claim 44 further comprising [wherein]:

forming a slit in the substrate [has a slit formed] between the second temperature detector and the heater.